

## REMARKS

Re-examination and allowance of the above-captioned application is respectfully requested.

Applicants thank the Examiner for discussing the present application with their U.S. counsel on June 21, 2006. During the discussion, Applicants' U.S. counsel discussed distinctions between the presently claimed invention and U.S. Patent 5,727,122 to HOSODA et al. As a result of the discussion, Applicants herewith submit the following remarks for the Examiner's consideration.

Applicants respectfully traverse the Examiner's 35 U.S.C. §102(e) rejection of claims 21-30 as being anticipated by HOSODA et al., submitting that the applied reference fails to disclose at least "a waveform providing system configured to provide a fixed waveform from a memory", and "a convolution system configured to convolute said fixed waveform with said input excitation vector to generate a modified excitation vector", as recited in Applicants' independent claim 21.

In the Advisory Action mailed June 2, 2006, the Examiner indicated that the request for reconsideration filed on May 3, 2006 did not place the application in condition for allowance. The Examiner indicated that the waveform of U.S. Patent 5,727,122 to HOSODA et al. can be fixed in nature (referring to column 14, lines 35-44 and Fig. 10, sub-block 150 and 152 of "related" U.S. Patent 5,752,223 to AOYAGI et al. (of which HOSODA is a co-inventor)), the vector used as the input vector being fixed or non-fixed. Thus, the Examiner, asserted that although the labeling is a "stochastic codebook", it contains fixed elements, and that the "h" vector is also fixed in nature, such that the convolution in HOSODA et al. applies.

Applicants submit that the Examiner's assertion is erroneous, and that one skilled in the art recognizes that the waveforms stored in the fixed codebook 150 of HOSODA et al. are fixed waveforms. Applicants further submit that the waveforms stored in the fixed codebook 150 of HOSODA et al. correspond to Applicants' claimed input excitation vector provided by an algebraic codebook, and that this is a fixed codebook that does not correspond to Applicants' claimed fixed waveform, as is asserted by the Examiner.

The Examiner also asserted that the "h" vector is fixed in nature. Applicants respectfully submit that the Examiner's is mistaken. Applicants submit that the "h" vector changes dynamically every frame. The Examiner is respectfully referred to, for example, column 2, lines 53-64; column 4, lines 37-47; column 6, lines 1-39; column 8, lines 60-67; column 9, line 66 to column 10, line 34; column 11, lines 14-19; and sub-blocks 109, 206, 328 and 450 of HOSODA et al. for support of Applicants' position that the "h" vector in HOSODA et al. is not fixed, but rather, changes by every frame.

In view of the above, Applicants submit that a convolution system of the presently claimed invention convolutes an input excitation vector that is provided by an algebraic codebook and a fixed waveform, and that the fixed waveform of Applicants' claimed invention is not disclosed (or even suggested) by HOSODA et al. (or its "related" patent to AOYAGI et al.). Accordingly, Applicants submit that the ground for the 35 U.S.C. §102(e) rejection of the pending claims set forth by the Examiner in the final Office Action of February 3, 2006 and re-iterated in the Advisory Action no longer exists. As a result, the Examiner is respectfully requested to withdraw this ground of rejection against the claims.

Applicants also respectfully traverse the judicially created doctrine of double patenting rejection over the claims of U.S. Patent 6,421,639 in view of HOSDA et al. In setting forth this rejection, the Examiner asserted that the '639 patent discloses all the features of Applicants' claimed invention, but for using the modified excitation vector in the synthesis filter in a CELP system, but that this feature is taught by HOSODA. Based on the above discussion, Applicants submit that HODODA et al, fails to disclose the feature asserted by the Examiner to exist in HOSODA et al. Accordingly, Applicants submit that the presently claimed invention is not taught by the combination suggested by the Examiner, and thus, the ground for the double patenting rejection no longer exists. Accordingly, Applicants respectfully request withdrawal of this ground of rejection.

During the above-mentioned discussion with the Examiner, the Examiner indicated that the present application could not be passed to issue until such time as he has reviewed all the claims in numerous related applications for the purpose of making a double patenting determination. The Examiner indicated that he has not been able to complete this review because not all of the related applications are available to him. For the convenience of the Examiner, Applicants note the related applications, along with their status, as follows:

- (1) U.S. Application No. 09/101,186 issued as U.S. Patent 6,453,288;
- (2) U.S. Application No. 09/440,087 issued as U.S. Patent 6,330,534;
- (3) U.S. Application No. 09/440,083 issued as U.S. Patent 6,421,639;
- (4) U.S. Application No. 09/440,092 issued as U.S. Patent 6,330,535;
- (5) U.S. Application No. 09/440,199 issued as U.S. Patent 6,345,247;

- (6) U.S. Application No. 09/440,093 issued as U.S. Patent 6,910,008;
- (7) U.S. Application No. 09/855,708 issued as U.S. Patent 6,757,650;
- (8) U.S. Application No. 09/843,939 issued as U.S. Patent 6,947,889;
- (9) U.S. Application No. 09/843,938 issued as U.S. Patent 6,772,115;
- (10) U.S. Application No. 09/843,877 issued as U.S. Patent 6,799,160;
- (11) U.S. Application No. 10/036,451 has gone abandoned;
- (12) U.S. Application No. 11,126,171 has been published as U.S. Patent Application Publication No. 2005-0203736, but has not yet been examined; and
- (13) U.S. Application No. 11/421,932 has not yet been examined.

The patents (and hence the claims) of applications (1) through (10) are available via the USPTO Patent Full-Text and Image Database. Application (12) is available via the U.S. Patent and Trademark Office Patent Application Full Text And Image Database. The sole claim printed in the U.S. Patent Application Publication corresponds to the only claim currently pending in the application, and a complete copy of the application file is available in the Image File Wrapper section of the PAIR Database. A complete copy of application (13), which includes the claims pending in the application, is available via the Image File Wrapper section of the PAIR Database. However, for the convenience of the Examiner, Applicants enclose herewith copies of the claims pending in applications (12) and (13). Applicants submit that it is not necessary to submit a copy of the claims with respect to application (11), as that application is abandoned.

Applicants believe that this list is an accurate representation of the applications related to the present, above-captioned application. However, should the Examiner be

aware of any other application that he believes to be related to the present application, and the claims of said application is not readily available to the Examiner, he is requested to immediately contact the undersigned at the below-listed telephone number, who will promptly provide a copy of the pending claims for the Examiner's review.

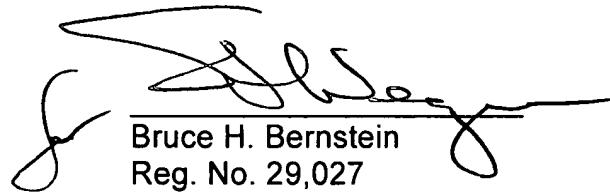
Applicants submit that the claims of the related applications should be available to the Examiner to enable him to complete his comparison of the claims in the related applications to the claims in the present application. The Examiner is respectfully requested to promptly review these applications prior to issuing the next official communication, and to confirm the completion of said review in the next official communication.

SUMMARY AND CONCLUSION

In view of the fact that none of the art of record, whether considered alone or in combination, discloses or suggests the present invention as now defined by the pending claims, and in further view of the above remarks, reconsideration of the Examiner's action and allowance of the present application is respectfully requested and is believed to be appropriate.

If there should be any questions concerning this application, the Examiner is requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,  
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Enclosures:

Claims pending in U.S. Application No. 11/126,171 (copy)  
Claims pending in U.S. Application No. 11/421,932 (copy)



## Claim 1

A noise canceller for removing a noise component from an input speech signal, the noise canceller comprising:

- a noise cancellation coefficient adjuster that adjusts a noise cancellation coefficient to determine an amount of noise cancellation;
- a noise spectrum storage device that stores an estimated noise spectrum;
- a noise estimator that estimates a noise spectrum by comparing an input spectrum with a noise spectrum stored in said noise spectrum storage device;
- a noise canceling/spectrum compensator that subtracts said noise spectrum stored in said noise spectrum storage device from said input spectrum based on a coefficient acquired by said noise cancellation coefficient adjuster.

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What is claimed is:



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1. An excitation vector generator, comprising:  
an input vector providing system capable of providing an input vector having at least one pulse, each pulse having a predetermined position and a respective polarity;  
a fixed waveform storage system capable of storing at least one fixed waveform; and  
an arranging system capable of arranging said at least one fixed waveform in accordance with the position and the polarity of said at least one pulse.
2. The excitation vector generator of claim 1, wherein said arranging system spreads an energy distribution of said input vector over a subframe based upon said at least one fixed waveform.
3. The excitation vector generator according to claim 2, wherein said arranging system truncates a portion of said at least one fixed waveform that extends beyond a length of the subframe.
4. The excitation vector generator of claim 1, wherein said input vector is provided from an algebraic codebook.
5. The excitation vector generator of claim 1, wherein said input vector comprises a vector having a plurality of non-zero samples.
6. The excitation vector generator of claim 1, further comprising a plurality of fixed waveforms.
7. The excitation vector generator of claim 6, wherein said arranging system arranges one of said plurality of fixed waveforms corresponding to each pulse.
8. The excitation vector generator of claim 7, wherein said arranging system arranges a different one of said plurality of fixed waveforms corresponding to each pulse.
9. The excitation vector generator of claim 6, wherein said arranging system arranges one of said plurality of fixed waveforms in accordance with a position and a polarity of each of said plurality of pulses in an input vector.

10. The excitation vector generator of claim 6, wherein said arranging system uses one of said plurality of fixed waveforms for each subframe.

11. A method for generating an excitation vector used in the production of synthesized speech, comprising:

providing an input vector having a plurality of pulses, each pulse of said plurality of pulses having a predetermined position and a predetermined polarity;

providing a plurality of fixed waveforms;

arranging one fixed waveform of said plurality of fixed waveforms in accordance with a position and a polarity of the plurality of pulses of said input vector; and

generating an excitation vector based on said arranged waveform.

12. The method of claim 11, wherein said input vector is provided from an algebraic codebook.

13. An excitation vector generator, comprising:

an input vector providing system capable of providing an input vector having at least one pulse, said at least one pulse having a predetermined position and a predetermined polarity;

a fixed waveform storage system that stores at least one fixed waveform; and

a shifting system that shifts said at least one fixed waveform in accordance with the predetermined position and the predetermined polarity of said at least one pulse of said input vector.

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11/421,932

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